FIG. 1

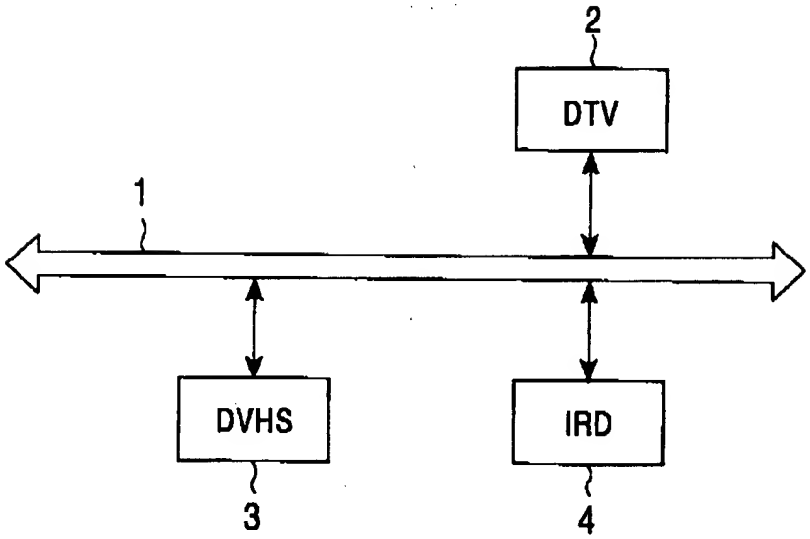

FIG. 2

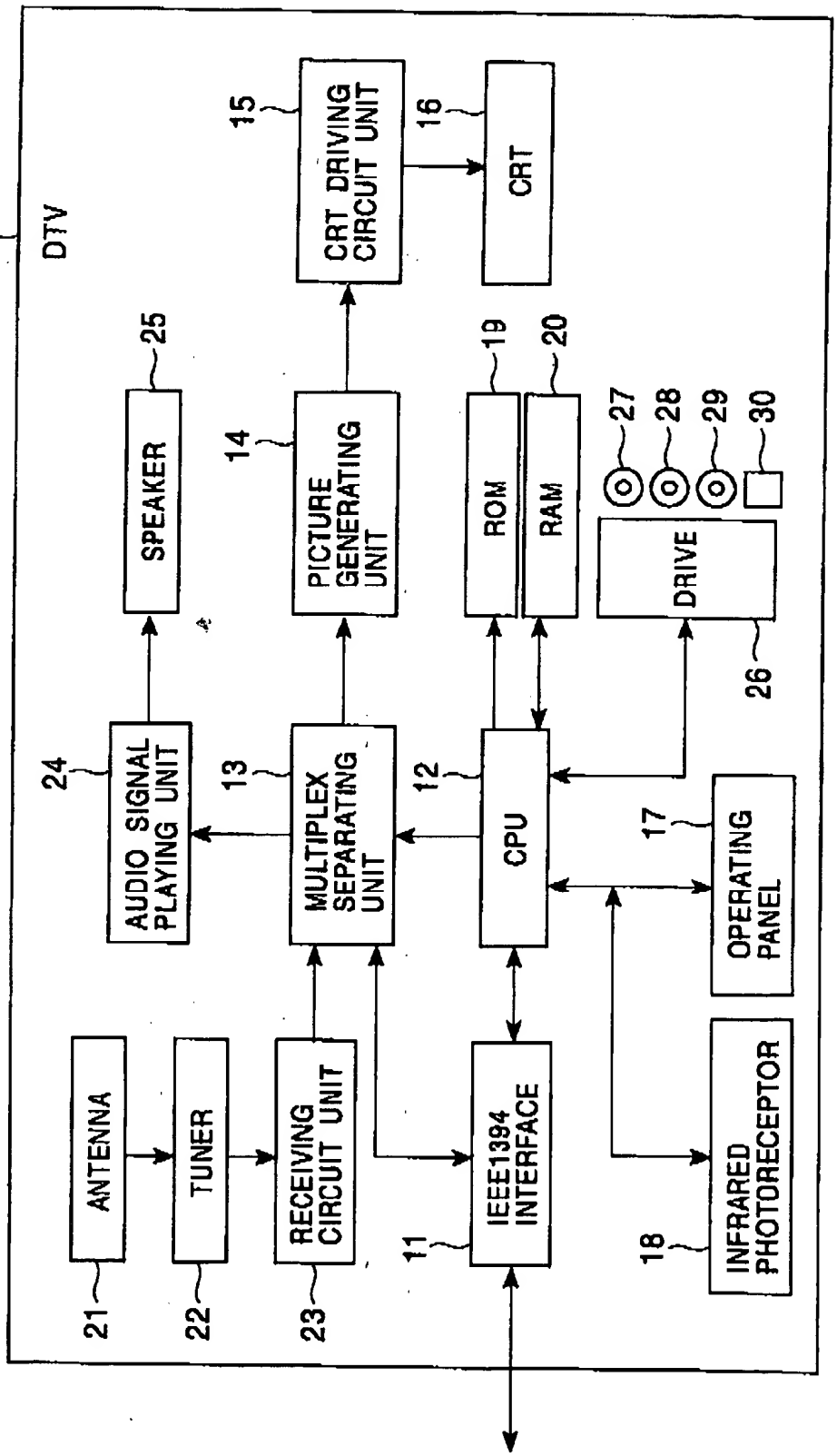
2
DTV
15
CRT DRIVING CIRCUIT UNIT
16
CRT
25
SPEAKER
14
PICTURE GENERATING UNIT
19
ROM
20
RAM
27
28
29
30
DRIVE
26
24
AUDIO SIGNAL PLAYING UNIT
13
MULTIPLEX SEPARATING UNIT
12
CPU
17
OPERATING PANEL
ANTENNA
TUNER
RECEIVING CIRCUIT UNIT
IEEE1394 INTERFACE
INFRARED PHOTORECEPTOR
21
22
23
11
18

FIG. 3

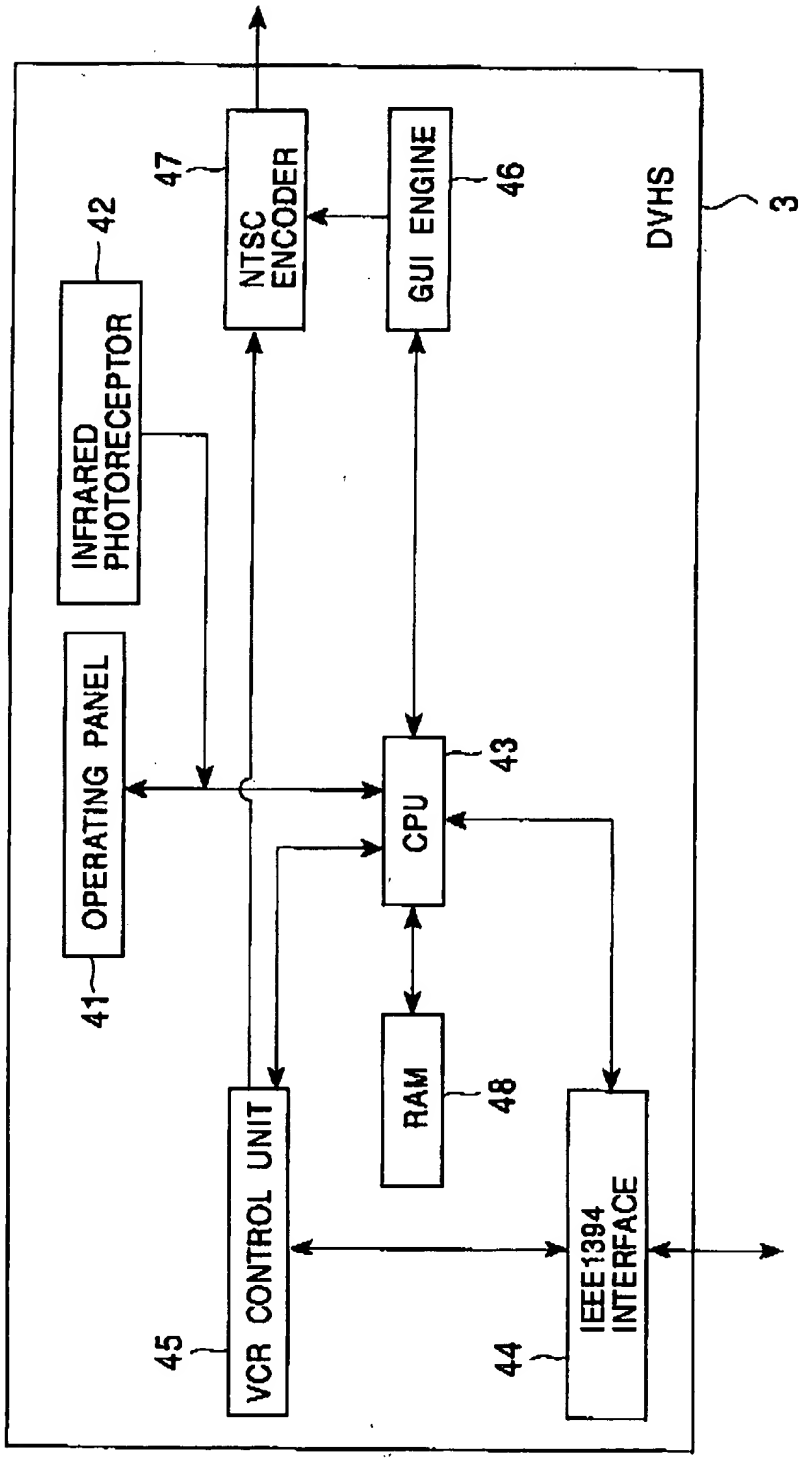
DVHS
3
NTSC ENCODER
47
GUI ENGINE
46
INFRARED PHOTORECEPTOR
42
OPERATING PANEL
41
CPU
43
RAM
48
VCR CONTROL UNIT
45
IEEE1394 INTERFACE
44

FIG. 4

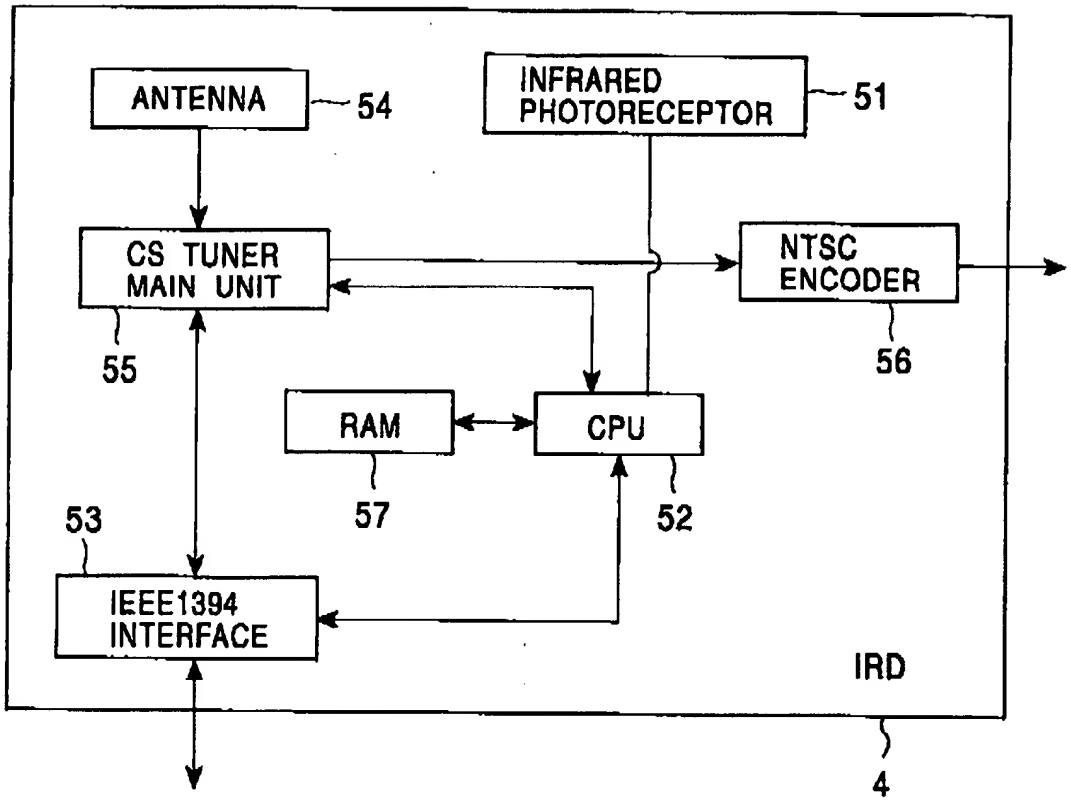
ANTENNA
54
INFRARED PHOTORECEPTOR
51
CS TUNER MAIN UNIT
55
NTSC ENCODER
56
RAM
57
CPU
52
53
IEEE1394 INTERFACE
IRD
4

FIG. 5

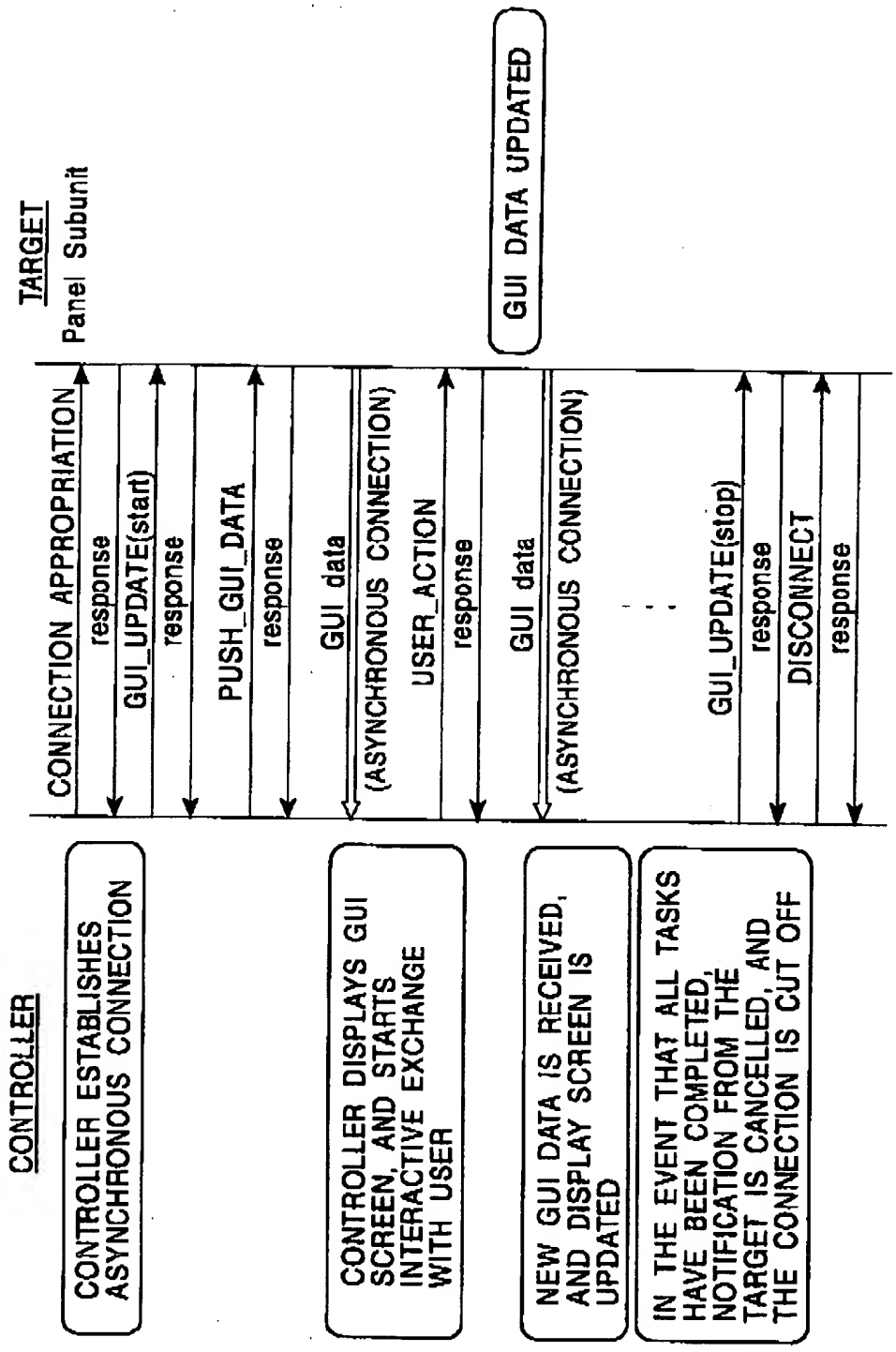
CONTROLLER
TARGET
Panel Subunit
CONTROLLER ESTABLISHES ASYNCHRONOUS CONNECTION
CONNECTION APPROPRIATION
response
GUI_UPDATE(start)
response
PUSH_GUI_DATA
response
GUI data
CONTROLLER DISPLAYS GUI SCREEN, AND STARTS INTERACTIVE EXCHANGE WITH USER
(ASYNCHRONOUS CONNECTION)
USER_ACTION
response
GUI data
GUI DATA UPDATED
NEW GUI DATA IS RECEIVED, AND DISPLAY SCREEN IS UPDATED
(ASYNCHRONOUS CONNECTION)
GUI_UPDATE(stop)
response
DISCONNECT
response
IN THE EVENT THAT ALL TASKS HAVE BEEN COMPLETED, NOTIFICATION FROM THE TARGET IS CANCELLED, AND THE CONNECTION IS CUT OFF

FIG. 6

	msb							lsb
opcode	GUI_UPDATE(XX_{16})							
operand[0]	source_plug							
operand[1]	support_model				availability			
operand[2]	generation_ID							
operand[3]	subfunction							
operand[4]	scope							

FIG. 7

VALUE OF support_model	COMMENTS
0_{16}	SUPPORTS EIA-775 MODEL
1_{16}	SUPPORTS PANEL NATIVE MODE
OTHER	UNUSED AREA FOR ITEMS YET TO BE DEFINED

FIG. 8

VALUE OF availability	COMMENTS
0_{16}	available
1_{16}	occupied
OTHER	UNUSED AREA FOR ITEMS YET TO BE DEFINED

FIG. 9

VALUE OF generation_ID	COMMENTS
00_{16}	GUI ELEMENT SETTINGS (FORMAT AND COMMANDS DEFINED IN VERSION 1.0 OF PANEL SUBUNIT SPECIFICATIONS)
OTHER	UNUSED AREA FOR ITEMS YET TO BE DEFINED

FIG. 10

VALUE OF subfunction	subfunction	COMMENTS
00_{16}	start	PANEL SUB-UNIT STARTS NOTIFICATION OF GUI OF INSTRUCTED scope
01_{16}	stop	PANEL SUB-UNIT TERMINATES UPDATING OF GUI
02_{16}	change	PANEL SUB-UNIT CHANGES scope OF UPDATING OF GUI
OTHER		UNUSED AREA FOR ITEMS YET TO BE DEFINED

FIG. 11

VALUE OF scope	scope	COMMENTS
00_{16}	NO INFORMATION	Scope IS NOT SET
01_{16}	DEVICE	PANEL SUB-UNIT NOTIFIES CHANGE OF ALL GUI ELEMENTS OF TARGET
02_{16}	CURRENT PANEL	PANEL SUB-UNIT NOTIFIES CHANGE OF ALL GUI ELEMENTS OF CURRENT PANEL

FIG. 12

	msb							lsb
opcode	PUSH_GUI_DATA(XX_{16})							
operand[0]	source_plug							
operand[1]	subfunction							
operand[2]	generation_number							
operand[3]								
operand[4]	status							
operand[5]	indicator							
operand[6]	element_identifier							
operand[7]								
operand[8]								
operand[9]								

FIG. 13

VALUE OF subfunction	subfunction	COMMENTS
00_{16}	new	PANEL SUB-UNIT STARTS TRANSMISSION OF SPECIFIED GUI DATA
01_{16}	clear	PANEL SUB_UNIT STOPS TRANSMISSION OF SPECIFIED GUI DATA
OTHER		UNUSED AREA FOR ITEMS YET TO BE DEFINED

FIG. 14

VALUE OF status	status	COMMENTS
00_{16}	no error	NO ERROR
81_{16}	preparation	PANEL SUB-UNIT PREPARING TO TRANSMIT PANEL DATA
82_{16}	source plug busy	PANEL SUB-UNIT TRANSMITTING PANEL DATA
83_{16}	no element	SPECIFIED DATA DOES NOT EXIST WITHIN CURRENT AREA
84_{16}	not connected	SPECIFIED SOURCE PLUG IS NOT CONNECTED TO ANY ASYNCHRONOUS PLUG
85_{16}	not owner	CONTROLLER IS NOT THE OWNER OF SPECIFIED SOURCE PLUG
86_{16}	canceled	CANCELLED DURING DATA TRANSMISSION
87_{16}	not transmitting	SPECIFIED DATA IS NEITHER BEING PREPARED NOR BEING TRANSMITTED
EF_{16}	any other error	OTHER INTERNAL ERROR OF PANEL SUB-UNIT
OTHER		UNUSED AREA FOR ITEMS YET TO BE DEFINED

FIG. 15

	msb							lsb
opcode	USER_ ACTION(XX_{16})							
operand[0]	source_plug							
operand[1]	generation_number							
operand[2]								
operand[3]	element_identifier							
operand[4]								
operand[5]								
operand[6]								
operand[7]	action_type							
operand[8]	data							
⋮								
⋮								

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FIG. 16

action_type	VALUE OF action_type	DATA FIELD	COMMENTS
select	00_{16}	UNUSED	SELECTION BY USER
press	01_{16}	UNUSED	BUTTON PRESSED BY USER
release	02_{16}	UNUSED	RELEASE BY USER
set_value	03_{16}	8-bit VALUE	SETTING VALUE INPUT BY USER
enter_data	04_{16}	TEXT DATA	DATA INPUT BY USER LENGTH OF DATA DIFFERS ACCORDING TO USER INPUT
choose_list	05_{16}	ELEMENT ID	ELEMENT SELECTED BY USER INPUT LENGTH OF DATA DIFFERS ACCORDING TO USER INPUT

FIG. 17

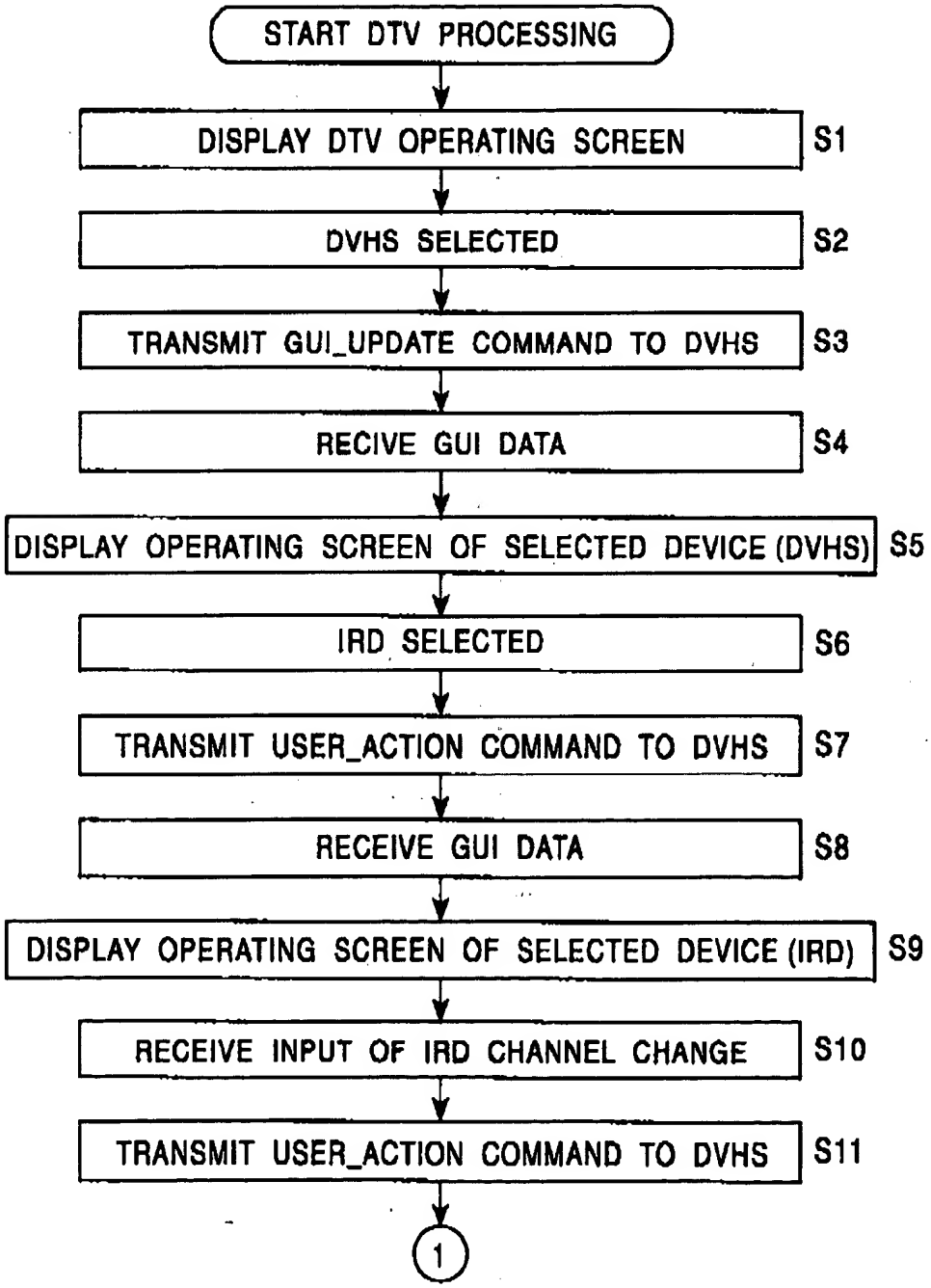

START DTV PROCESSING
DISPLAY DTV OPERATING SCREEN
S1
DVHS SELECTED
S2
TRANSMIT GUI_UPDATE COMMAND TO DVHS
S3
RECIVE GUI DATA
S4
DISPLAY OPERATING SCREEN OF SELECTED DEVICE (DVHS)
S5
IRD SELECTED
S6
TRANSMIT USER_ACTION COMMAND TO DVHS
S7
RECEIVE GUI DATA
S8
DISPLAY OPERATING SCREEN OF SELECTED DEVICE (IRD)
S9
RECEIVE INPUT OF IRD CHANNEL CHANGE
S10
TRANSMIT USER_ACTION COMMAND TO DVHS
S11
1

FIG. 18

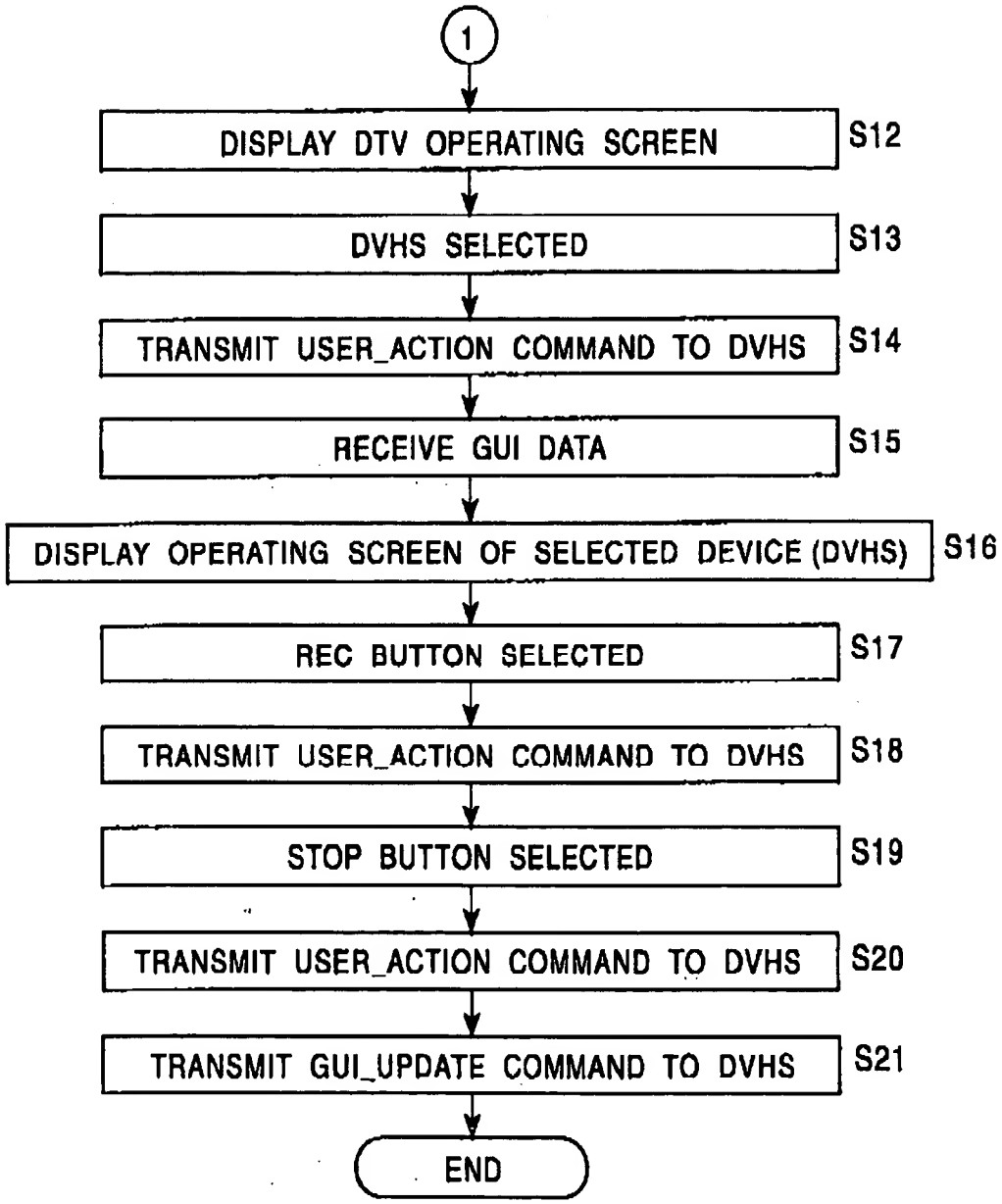

1
DISPLAY DTV OPERATING SCREEN
S12
DVHS SELECTED
S13
TRANSMIT USER_ACTION COMMAND TO DVHS
S14
RECEIVE GUI DATA
S15
DISPLAY OPERATING SCREEN OF SELECTED DEVICE (DVHS)
S16
REC BUTTON SELECTED
S17
TRANSMIT USER_ACTION COMMAND TO DVHS
S18
STOP BUTTON SELECTED
S19
TRANSMIT USER_ACTION COMMAND TO DVHS
S20
TRANSMIT GUI_UPDATE COMMAND TO DVHS
S21
END

FIG. 19

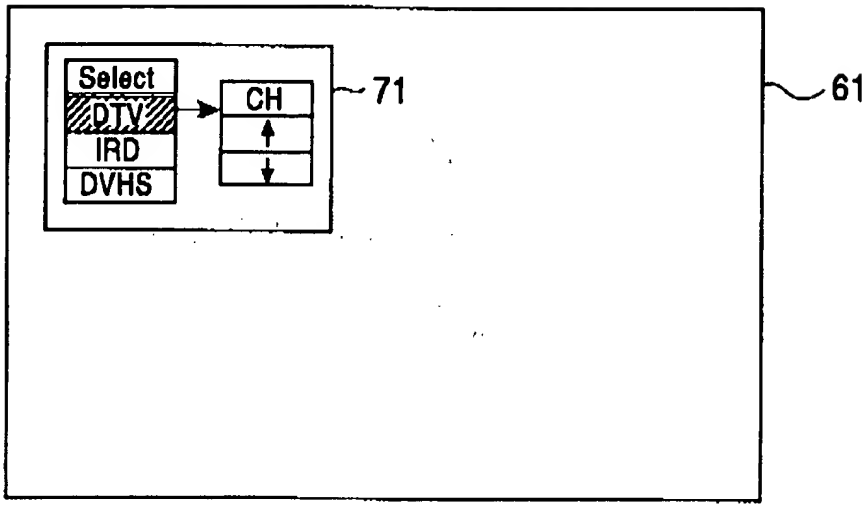

Select
DTV
IRD
DVHS
CH
71
61

FIG. 20

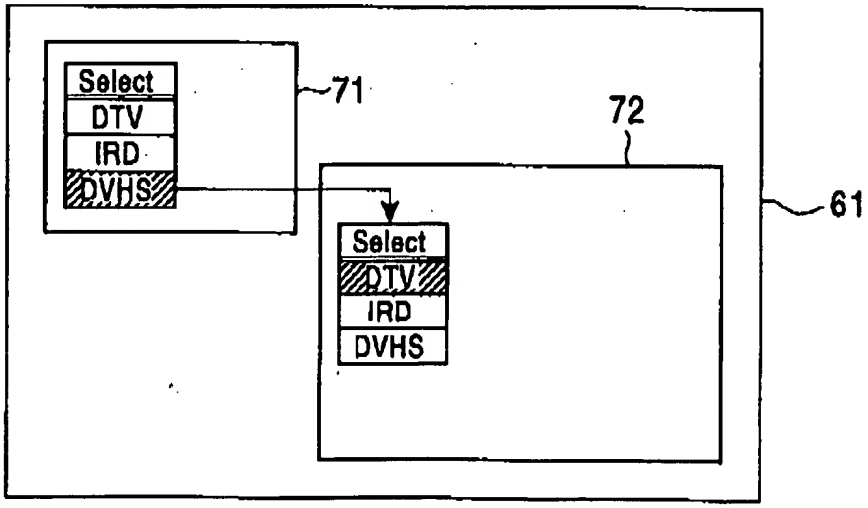

Select
DTV
IRD
DVHS
71
72
Select
DTV
IRD
DVHS
61

FIG. 21

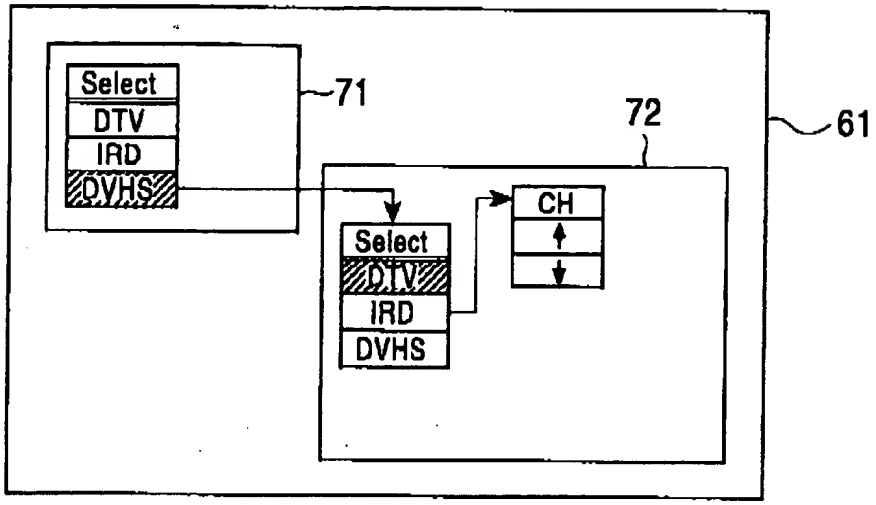

Select
DTV
IRD
DVHS
71
72
61
Select
DTV
IRD
DVHS
CH

FIG. 22

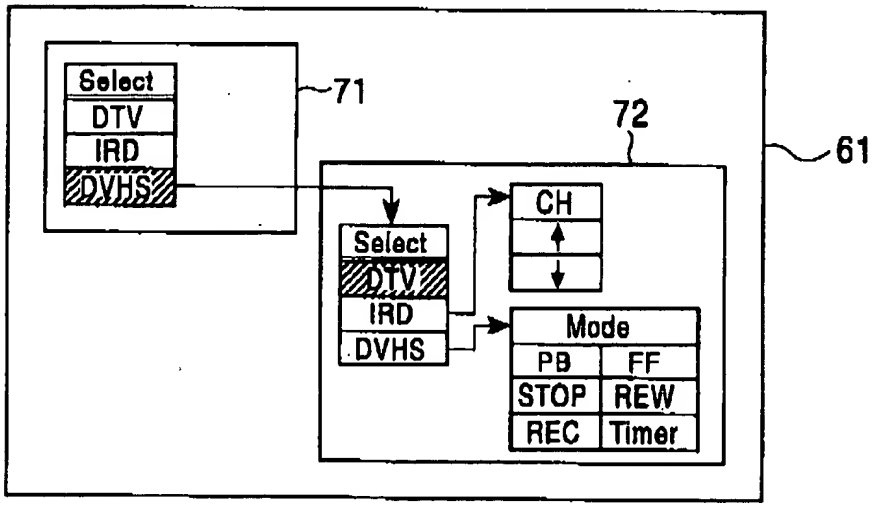

Select
DTV
IRD
DVHS
71
72
61
Select
DTV
IRD
DVHS
CH
Mode
PB
FF
STOP
REW
REC
Timer

FIG. 23

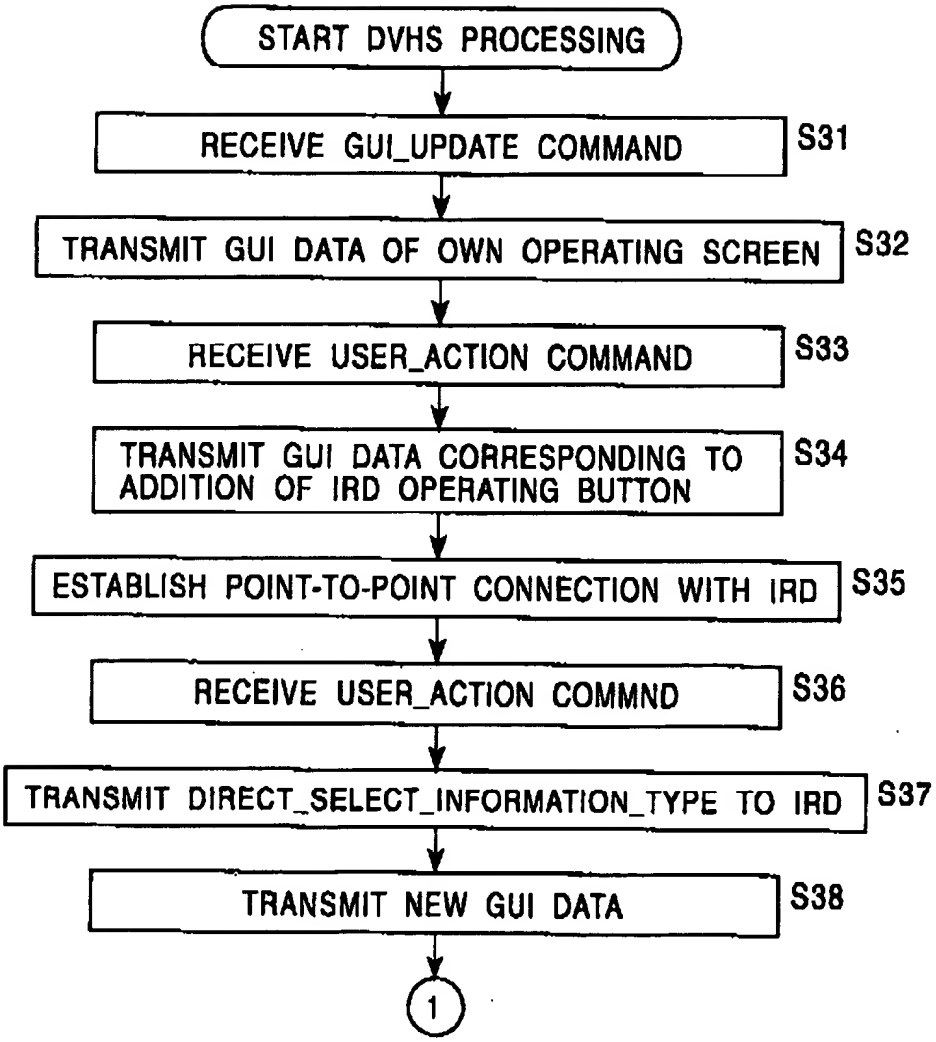
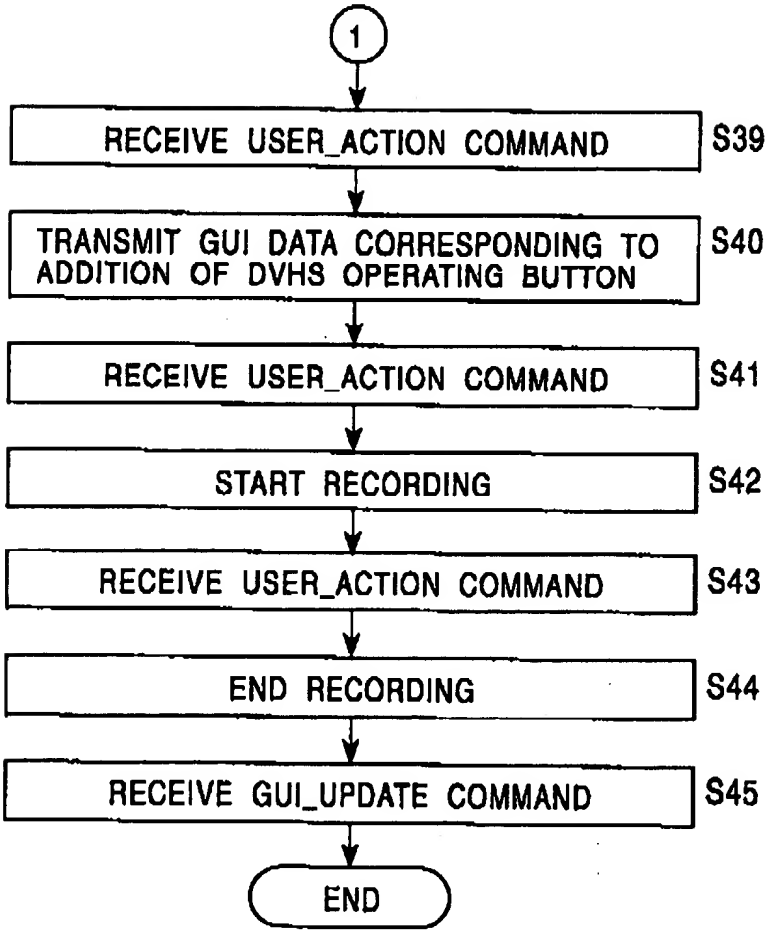

START DVHS PROCESSING
RECEIVE GUI_UPDATE COMMAND
S31
TRANSMIT GUI DATA OF OWN OPERATING SCREEN
S32
RECEIVE USER_ACTION COMMAND
S33
TRANSMIT GUI DATA CORRESPONDING TO ADDITION OF IRD OPERATING BUTTON
S34
ESTABLISH POINT-TO-POINT CONNECTION WITH IRD
S35
RECEIVE USER_ACTION COMMND
S36
TRANSMIT DIRECT_SELECT_INFORMATION_TYPE TO IRD
S37
TRANSMIT NEW GUI DATA
S38
1

FIG. 24


1
RECEIVE USER_ACTION COMMAND
S39
TRANSMIT GUI DATA CORRESPONDING TO ADDITION OF DVHS OPERATING BUTTON
S40
RECEIVE USER_ACTION COMMAND
S41
START RECORDING
S42
RECEIVE USER_ACTION COMMAND
S43
END RECORDING
S44
RECEIVE GUI_UPDATE COMMAND
S45
END